

Appl. No.: 10/656,394
Amdt. dated 01/12/2006
Reply to Office action of October 12, 2005

REMARKS

Status of the Claims

Claims 1-21 were rejected. Claims 1-21 remain pending.

Claims 1, 6, and 12 have been amended without prejudice or disclaimer to remove reference to fragments and hybridization conditions. Applicants reserve the right to pursue the canceled subject matter in a continuation or divisional application. No new matter has been added by way of these amendments.

The Objection to the Sequence Listing Should Be Withdrawn

In response to the Notice to Comply with Requirements for Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures which accompanied the Office Action mailed 10/12/05, please replace the computer-readable form filed on June 14, 2004, in the present application with the substitute computer-readable form submitted concurrently herewith. The disk filed on June 14, 2004 appears to have been corrupt. No alterations have been made to the original paper copy of the sequence listing and a paper copy does not accompany the response. It is submitted that the new CRF is submitted in accordance with 37 C.F.R. §1.825(a), and does not include new matter.

The Rejection of the Claims Under 35 U.S.C. §112, First Paragraph, Should be Withdrawn

Enablement:

Claims 1-21 continue to be rejected under 35 U.S.C. §112, first paragraph, for lack of enablement. The Examiner asserts that while the specification is enabled for the sequence set forth in SEQ ID NO:7, it is not enabled for a sequence having 95% sequence identity, a fragment of at least 40 contiguous nucleotides, or a sequence that hybridizes to SEQ ID NO:7, wherein each sequence encodes a polypeptide that confers Blast resistance to a plant. This rejection is respectfully traversed.

Claims 1, 6, and 12 have been amended to remove reference to sequences that hybridize under specific conditions and fragments.

The Examiner states on page 5, lines 1-3 that no evidence has been provided to support the conclusion that SEQ ID NO:7 is responsible for the Blast resistance phenotype. The Examiner therefore concludes that since SEQ ID NO:7 has no Blast resistance activity, sequences having less than 100% identity thereto are not expected to provide Blast resistance activity in a transgenic plant. See, page 5, lines 1-9 of Office Action mailed October 12, 2005.

A declaration under 35 U.S.C. §132 is filed concurrently herewith. As outlined in the declaration, expression of SEQ ID NO:7 does confer Blast resistance. The Examiner is respectfully requested to review and consider the declaration.

The Examiner cites Parker *et al.* (1996) *The Plant Cell* 8:2033-2046 and Bennetzen *et al.* (US 2002/0108140) as evidence for lack of enablement. Specifically, the Examiner states that these references teach that sequence homology data is not predictive of function. As Applicants have provided clear evidence that SEQ ID NO:7 (NBS4) confers Blast resistance, the Examiner's assertion regarding the unpredictability of associating sequence homology with function is moot.

On page 5, lines 14-22 of the October 12, 2005 office action, the Examiner states "Examiner agrees with Applicant that identification of a sequence with LRR-NBS domain, determination of sequence identity to SEQ ID NO:7 and sequences that hybridize to a complement of SEQ ID NO:7 or sequences encoding a fragment of 40 contiguous amino acids of SEQ ID NO:8 are known processes" (emphasis added). However, the Examiner states that achieving these sequences is unpredictable.

Clear evidence that SEQ ID NO:7 (NBS4) confers Blast resistance has been provided. As acknowledged by the Examiner, it is now customary in the art to make and assay a number of sequences for a desired function in order to achieve the best results. For example, common techniques involve what is often referred to as "shuffling," as described for example in U.S. Patent No. 5,837,458, issued November 17, 1998 with inventors Minshull and Stemmer and entitled, "Methods and Compositions for Metabolic and Cellular Engineering." In short, as illustrated by work described in U.S. Pat. No. 5,837,458, one of skill in the art would be able to produce novel sequences and evaluate whether they met the sequence identity limitations of the claims, as taught in the specification. One of skill in the art would then be able to identify whether those sequences retained the ability to confer Blast resistance as taught in the

specification. With “shuffling” techniques, it is common to mutagenize individual sequences or a set of sequences which are then assayed for a desired activity. Such techniques may even make use of a library of sequences which is recursively mutagenized, screened for function using a functional assay, and re-mutagenized in order to find a sequence exhibiting optimal function. Examples of the use of such techniques include: Minshull and Stemmer (1999) *Current Opinion in Chemical Biology* 3:284-290, entitled “Protein Evolution by Molecular Breeding”; and Christians *et al.* (1999) *Nature Biotechnology* 17: 259-264, entitled “Directed evolution of thymidine kinase for AZT phosphorylation using DNA family shuffling.” Each of these references are provided herewith as Appendix A, B, and Appendix C.

Such experiments are designed and are intended to encompass the generation and testing of a very large number of variant sequences for a desired function. As indicated by these and other publications in the art, this level of experimentation is now considered routine in the art and thus would not be considered “undue experimentation” under *In re Wands*, 858 F.2d 731, 8 USPQ2d 1400 (Fed Cir 1988) and *In re Jackson*, 217 USPQ 804, 807 (Bd. Pat. App. & Int. 1982) (holding that a considerable amount of experimentation is permitted to practice the invention and is not undue if it is merely routine in the art or if the specification provides a reasonable amount of guidance and direction to perform such experimentation).

In view of the evidence and argument provided above, claims 1-21 satisfy the enablement requirement of 35 U.S.C. §112, and the Examiner is respectfully requested to withdraw the rejection.

Written Description:

Claims 1-21 were rejected under 35 U.S.C. §112, first paragraph, for lack of sufficient written description. The Examiner asserts that the claims reciting a nucleic acid encoding a polypeptide comprising any 40 contiguous amino acids of SEQ ID NO:8 are not expected to meet the functional characteristics recited in the claims. This rejection is respectfully traversed.

While Applicants believe the recited fragments are sufficiently described, to expedite prosecution the claims drawn to fragments has been canceled. The Examiner’s rejection has been obviated.

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The Rejection of the Claims Under 35 U.S.C. §102 Should Be Withdrawn.

Claims 1-6 and 8-12 and 14-21 were rejected under 35 U.S.C. §102(b) as being anticipated by Yanno *et al.* (U.S. Patent No. 6,274,789) and Hodges *et al.* (U.S. Patent No. 5,577,175). This rejection is respectfully traversed.

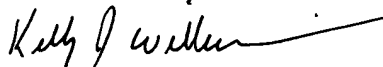
The Examiner states that the term “complement” can be interpreted to encompass a single nucleotide. The claims have been amended and no longer refer to sequences that hybridize under specific conditions. The rejection of the claims has been obviated. The Examiner is respectfully requested to withdraw the rejection of claims 1-6 and 8-12 and 14-21 under 35 U.S.C. §102.

CONCLUSIONS

In view of the foregoing amendments and remarks, Applicants respectfully submit that the rejection of claims 1-21 should be withdrawn. Accordingly, Applicants submit that this application is in condition for allowance. Early notice to this effect is solicited.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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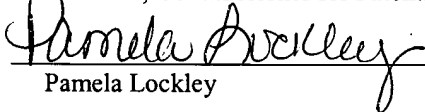
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I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.


Pamela Lockley

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